



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/630,818	07/29/2003	Eric Edward Fullerton	ARC9200D0096US2	8153
36023 7590 07/31/2007 HITACHI GLOBAL STORAGE TECHNOLOGIES, INC. 5600 COTTLE ROAD, NHGB/0142 IP DEPARTMENT SAN JOSE, CA 95193			EXAMINER RICKMAN, HOLLY C	
			ART UNIT 1773	PAPER NUMBER
			MAIL DATE 07/31/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/630,818	Applicant(s) FULLERTON ET AL.	
	Examiner Holly Rickman	Art Unit 1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7/15/05, 7/29/05</u> | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Reissue Applications

1. The reissue oath/declaration filed with this application is defective because it fails to identify at least one error which is relied upon to support the reissue application. See 37 CFR 1.175(a)(1) and MPEP § 1414. The examiner notes that while applicant states that this reissue narrows the patent claims, and that new dependent claims are added, applicant does not identify a single word, phrase or expression in the claims which is being amended.
2. Claims 1-16 are rejected as being based upon a defective reissue oath/declaration under 35 U.S.C. 251 as set forth above. See 37 CFR 1.175.

The nature of the defect(s) in the oath/declaration is set forth in the discussion above in this Office action.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-5, 8-12 and 15-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the

Art Unit: 1773

relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The original disclosure fails to provide support for the limitation of claim 1 requiring “**data tracks patterned along the track** into first regions...and second regions” (emphasis added) and the limitation of claim 10 requiring “the **data tracks...patterned along the track** into first regions...and second regions” (emphasis added). The specification and drawings provide support for first and second regions but fail to indicate that these first and second regions are patterned along concentric data tracks. The examiner notes that Figure 3 shows a patterned magnetic layer but does not indicate whether the patterned first and second regions are oriented along data tracks (i.e., circumferentially) or across data tracks (i.e. radially).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(g)(1) during the course of an interference conducted under section 135 or section 291, another inventor involved therein establishes, to the extent permitted in section 104, that before such person's invention thereof the invention was made by such other inventor and not abandoned, suppressed, or concealed, or (2) before such person's invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it. In determining priority of invention under this subsection, there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

Art Unit: 1773

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 10, and 15-16 are rejected under 35 U.S.C. 102(g) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over lost count 1 of interference 105,110 taken in view of Toigo ("Avoiding a Data Crunch", Scientific American, May 2000, pp. 58-74).

This application is a reissue of U.S. Serial No. 09/602,609. Interference 105,110 has been terminated by a decision that applicant was not the first inventor of the subject matter of Serial No. 09/602,609. The difference between presently rejected claims and lost count 1 of interference 105,110 is the requirement as set forth in claims 1 and 10 that the magnetic layer has a plurality of concentric data tracks being patterned along the track.

Toigo teaches a conventional patterned media on page 67 having a disk with concentric tracks that are patterned along the tracks (see the section entitled "Patterns of Bits" on page 67 of the article). It would have been obvious to one of ordinary skill in the art at the time of invention to pattern the medium as set forth in lost count 1 of interference 105, 110 in the conventional manner shown and described by Toigo.

With regard to claims 15-16, the examiner notes that the limitations set forth therein directed to "non-irradiated regions" are directed to process limitations in article claims. The recitation "ion-irradiated" is directed to how the second regions are made and does not materially distinguish the claimed invention over lost count 1 of interference 105,110 taken in view of Toigo, as described above.

8. Claim 1, 10 and 15-16 are rejected under the principles of res judicata and collateral estoppel as not patentably distinct from the subject matter of count 1 of interference 105,110

Art Unit: 1773

taken in view of Toigo ("Avoiding a Data Crunch", Scientific American, May 2000, pp. 58-74).

In re Deckler, 997 F.2d 1448 (Fed. Cir. 1992).

This application is a reissue of U.S. Serial No. 09/602,609. Interference 105,110 has been terminated by a decision that applicant was not the first inventor of the subject matter of Serial No. 09/602,609.

The difference between presently rejected claims and lost count 1 of interference 105,110 is the requirement as set forth in claims 1 and 10 that the magnetic layer has a plurality of concentric data tracks being patterned along the track.

Toigo teaches a conventional patterned media on page 67 having a disk with concentric tracks that are patterned along the tracks (see the section entitled "Patterns of Bits" on page 67 of the article). It would have been obvious to one of ordinary skill in the art at the time of invention to pattern the medium as set forth in lost count 1 of interference 105, 110 in the conventional manner shown and described by Toigo.

With regard to claims 15-16, the examiner notes that the limitations set forth therein directed to "non-irradiated regions" are directed to process limitations in article claims. The recitation "ion-irradiated" is directed to how the second regions are made and does not materially distinguish the claimed invention over lost count 1 of interference 105,110 taken in view of Toigo, as described above.

Accordingly, claims 1, 10 and 15-16 are rejected under the principles of res judicata and collateral estoppel as not patentably distinct from the subject matter of count 1 of interference 105,110 taken in view of Toigo.

Allowable Subject Matter

9. Claims 6-7 and 13-14 are allowable over the closest prior art to Abarra et al. (abstract of the 2000 IEEE International Magnetics Conference, 4/9/00-4/13/00), Carey et al. (US 6280813), Chappert et al. (Science, Vol. 280, 19 June 1988, pp 1919-1922) and Terris et al. (Appl. Phys. Lett., Vol. 75, No. 3, 19 July 1999, pp 403-405).

Abarra et al. and Carey et al. both disclose the claimed synthetic antiferromagnetic structure, that is, a first and a second ferromagnetic layer separated by a nonmagnetic spacer layer wherein the first and second ferromagnetic layers are antiferromagnetically coupled. The references are silent with respect to forming patterned regions of antiferromagnetic coupling between the layers and other regions having ferromagnetic coupling between the ferromagnetic layers and the use of an interface layer consisting essentially of Co between either of the ferromagnetic films and the nonmagnetic spacer layer. There is no teaching or suggestion in the prior art to modify the teachings of Abarra et al. or Carey et al. to meet the limitations of the present claims.

Chappert et al. and Terris et al. disclose ion-beam patterning of Co/Pt multilayer structures in order to create magnetic regions separated from one another by non-magnetic regions. The references fail to teach or suggest the use of the patterning process in combination with a medium having first and second magnetic layers antiferromagnetically coupled across a non-magnetic spacer layer. There is no teaching or suggestion in the prior art to motivate one of ordinary skill in the art to substitute an antiferromagnetically coupled ferromagnetic/nonmagnetic/ferromagnetic structure for the Co/Pt multilayer structure taught by

Art Unit: 1773

Chappert et al. and Terris et al. The reference fails to teach or suggest a motivation to add the claimed interface layer to the aforementioned structures.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 5408377, US 5465185, US 5587223, US 5768075, and US 5820769 are cited as art of interest.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1773

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Holly Rickman
Primary Examiner
Art Unit 1773

hr
July 3, 2007